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NOTES ON SEEDLINGS.

(With 7 Plates.)

BY RICHARD VOGT.

I.—CARDAMINE DOUGLASSII.

The following is a chronological table of the nomenclature of this species.

CARDAMINE (Tourn.) L. Sp. Pl. 456, 1753.

CARDAMINE DOUGLASSII Britt. Trans. N. Y. Acad. Sci. 9:8, 1889.

Arabis rhomboidea, var. *purpurea*. Torr. Am. Journ. Sci. 6:44, 1882.

Cardamine purpurea. Cham. & Schlecht. Linneaea 1, 1824.

Arabis Douglassii Torr. T. & G. Fl. N. A. 1:83, 1838 as a synonym.

During the past spring the young plants were closely watched with the view of determining which part of the seedling formed the well-known tuber of the mature plant. The development of the seedling takes place as follows.

The cotyledons are hypogeal and remain for some time enveloped in the seed coat. The hypocotyl is short and of a conical shape terminating below in the primary root (Plate IV). The epicotyl in very young seedlings is short, erect and of small diameter. It gives rise at first to a single cordate long petioled primary leaf and later to form one to four secondary leaves arising in close proximity to the first one. When the second leaf appears the epicotyl begins to increase in diameter and secondary roots are given off, usually from the axils of the cotyledons but occasionally from other points on the epicotyl (Plates IV. and V). The epicotyl itself continues to increase markedly in thickness until it becomes a globose tuber and at the same time it inclines

from its original upright position towards a horizontal one (Plates VI. to VIII). The primary root soon decays leaving a scar at the base of the hypocotyl. The cotyledons also drop off and about the beginning of June, the leaves wither, there remaining only the hypocotyl and the tuberous epicotyl with its secondary roots. At the beginning of the second season a slender rootstock is produced from the apex of the tuberous epicotyl, and later a second tuber, with its cluster of leaves is formed at the tip of this rootstock. One specimen was found which had produced such a tuber the first season (Plate VIII.); this, however, was only separated from the original tuber by a short rhizome. These facts seem to show clearly enough that the tuberous growth is produced from the epicotyl and not from the hypocotyl in part at least as is usually the case.

II.—Syndesmon Thalictroides.

The following is a chronological table of the nomenclature of this species.

SYNDESMON. Hoffmg. Flora, 15: Part 2 Intell. Bl. 6:36 1832.

SYNDESMON THALICTROIDES (Linn.) Hoffmg. Flora 15: Part 2 Intell. Bl. 6, 36, 1832.

Anemone thalictroides Linn. Sp. Pl. 562, 1753.

Thalictrum anemonoides Michx. Fl. Bor. Am. 1, 322, 1803, also DC. Prod. 1, 15.

Anemonella thalictroides Spach. Hist. Veg. 7:260.

Thalictrum caule unifloro Clayton Fl. Virg. p. 43.

Ranunculus thalictri foliis grumosa radici. Bannister Cat. Stirp. Virg.

Ranunculus Nemorasus Aquilegiae foliis, Virginiana, Asphodeli radice. Pluk. Phyt. Tab. VI., 6.

The development of the seedlings was closely observed in order to discover the origin of the tuberous roots found in the adult plant. The cotyledons are epigeal and noticeably veined. Their petioles are channelled on the inner face and the cotyledons themselves are divaricate. The epicotyl is small and usually gives rise to but one leaf the first year. The hypocotyl is rather long and bears at its lower end the primary root, which, however, soon disappears. A number of persistent secondary roots are also produced near the base of the hypocotyl (Plate IX, Fig. 1). The

hypocotyl itself soon begins to swell out, causing the epidermis to crack and finally to peel off (Plate IX, Figs. 2, 3). Thus enlarged, the hypocotyl serves as a place for food storage. The second year two or three leaves are sent up from the epicotyl, and from the base of each petiole these arises usually a secondary root. These become enlarged until they resemble the swollen hypocotyl in appearance and serve like it for food storage. (Plate X). Commonly each leaf that arises thereafter produces such a root and the result in old plants is a considerable cluster of such tuberous roots. This shows then that the first tuber arises from the hypocotyl and the others from secondary roots originating from the base of the leaf petiole or just below it.

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NOTES ON OUR LOCAL PLANTS.—VII.

BY J. A NIEUWLAND.

Cerastium longipedunculatum Muhl., Cat., p. 46 (1813).

Cerastium nutans Raf., Préc. Découv., p. 36 (1814).

Nos. 11146, 9149, 9132, South of South Bend, Ind., 822 North Liberty, St. Joseph Co., No. 2040. Notre Dame (Powers).

Cerastium arvense Linn., Sp. Pl., p. 438 (1753).

Nos. 2546, 11031, 11241, 11085, Notre Dame, Ind., 2443, 2039, W. of Notre Dame, (Powers), 9240, 9202, N. of Notre Dame at Webster's Station.

ARENARIA Chabraeus, Sciagraphia, (1666), also 2nd Ed., p. 550, (1677).

Arenaria Guettard, Stamp., 2, p. 281 (1747), Ruppius, Fl. Jen., (1718), p. 89 (1726), *Arenaria* Linn., Syst. (1735), Gen., p. 133 (1737), p. 193 (1754), *Euthalia* Ruprecht, Fl. Cauc., p. 220 (1869).

Arenaria serpyllifolia Linn., Sp. Pl. p. 423 (1753).

Arenaria multicaulis Linn. and Hesselgren, Pan Suecus, Am. Acad., p. 248 (1751). Probably. *Spergula multicaulis* Dillenius, Giss., p. 58 (1718), *Euthalia serpyllifolia* Ruprecht, l. c., *Arenaria breviflora* Gilib., Enum. Pl. Ltih., 249, II, 155 (1781), *Alsine*

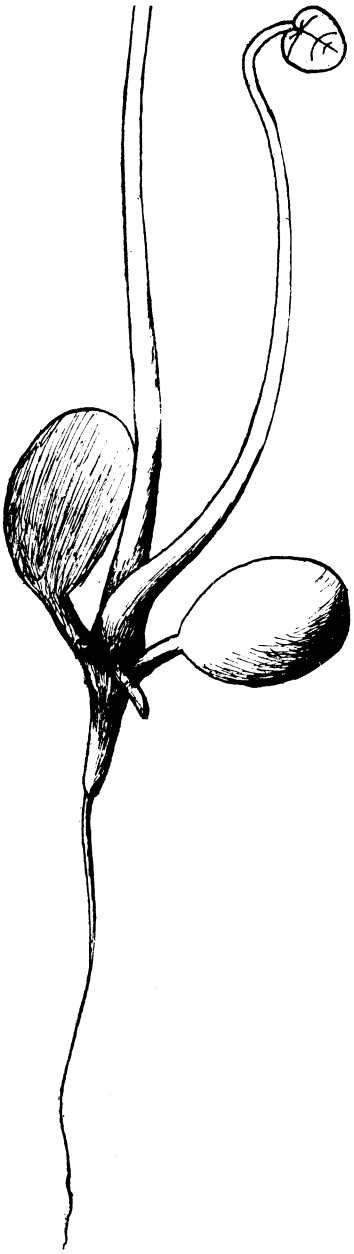

PLATE IV. VOGT on SEEDLINGS.

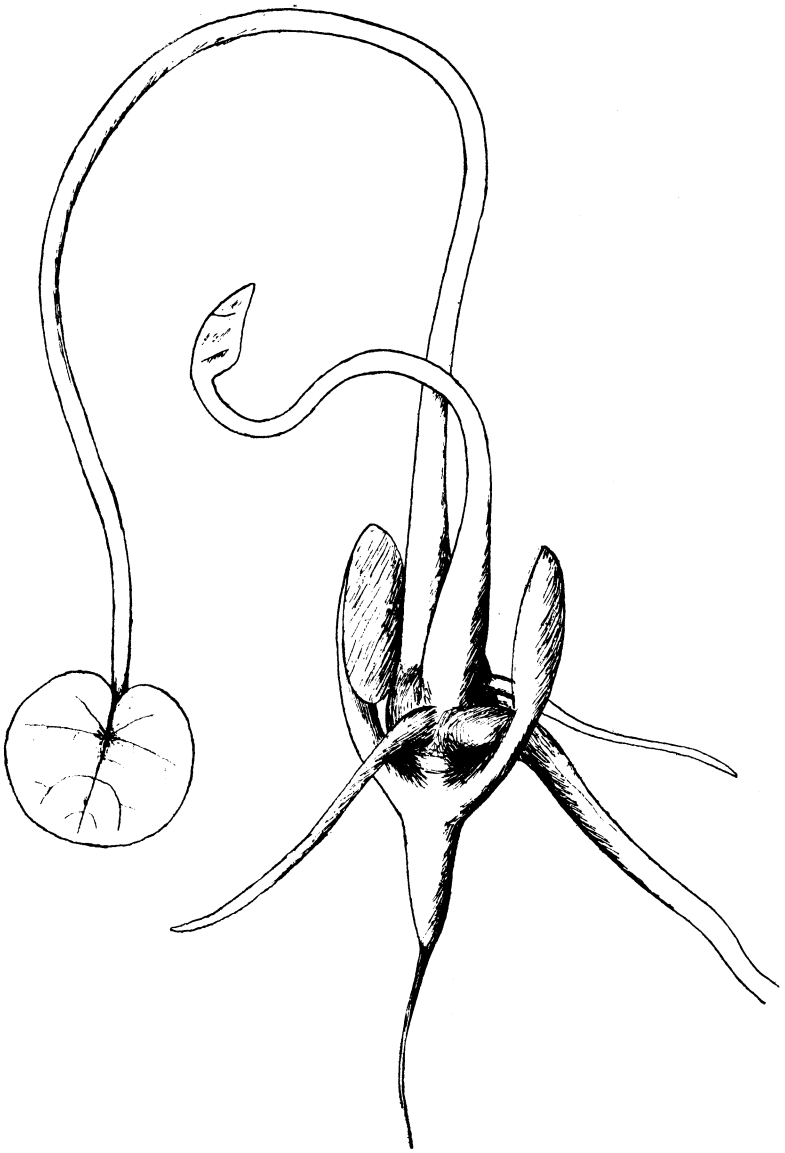

PLATE V. VOGT on SEEDLINGS.

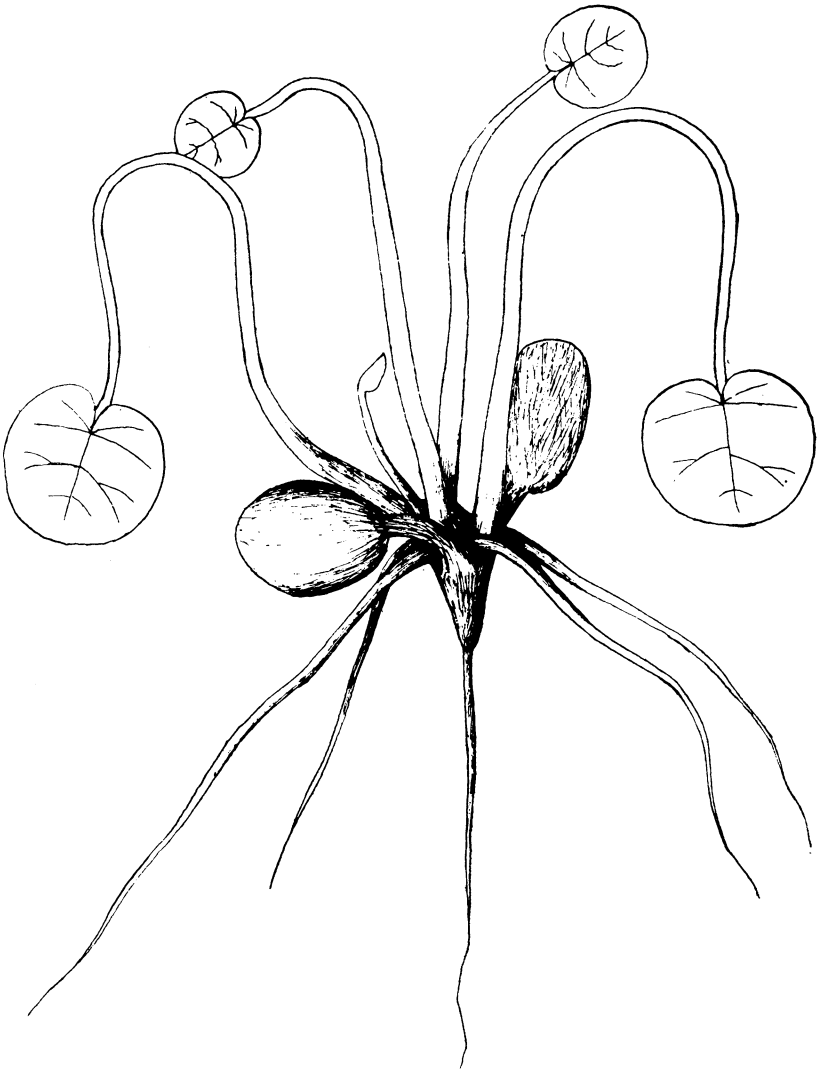

PLATE VI. VOGT on SEEDLINGS.

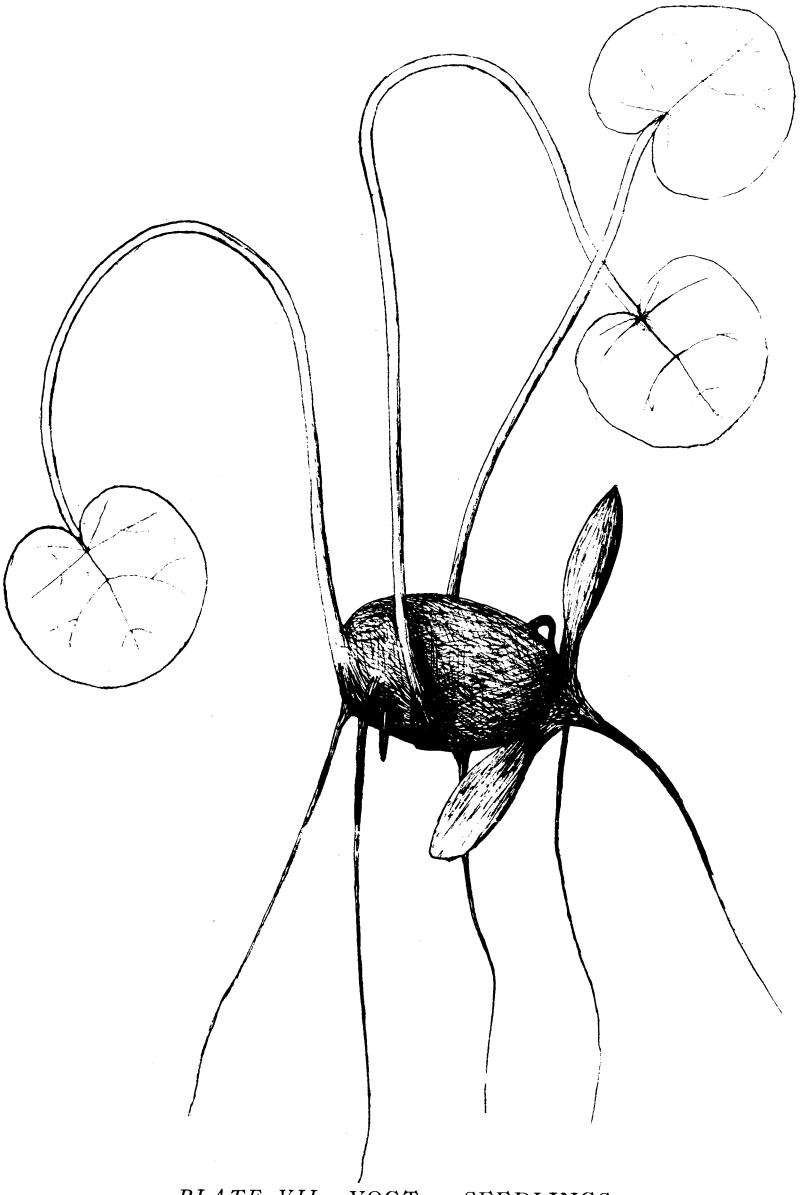

PLATE VII. VOGT on SEEDLINGS.

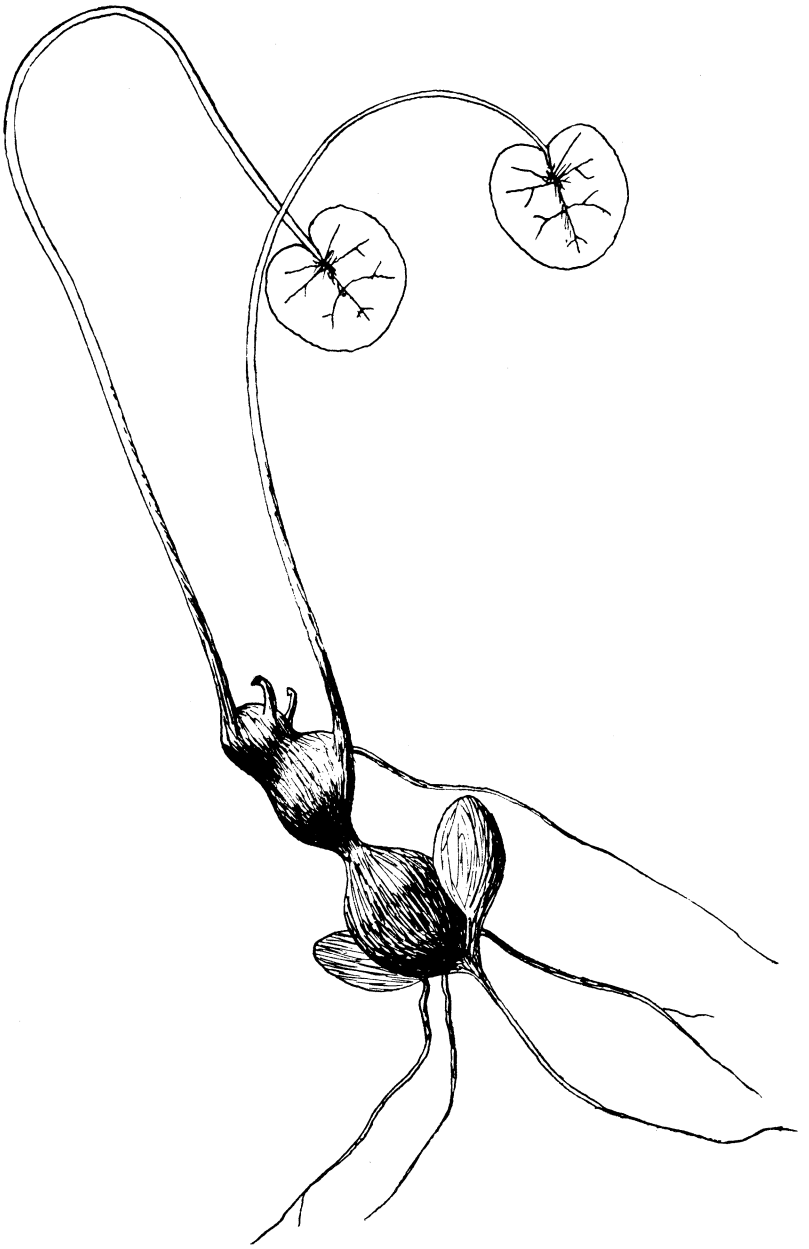

PLATE VIII. VOGT on SEEDLINGS.

PLATE IX. VOGT on SEEDLINGS.

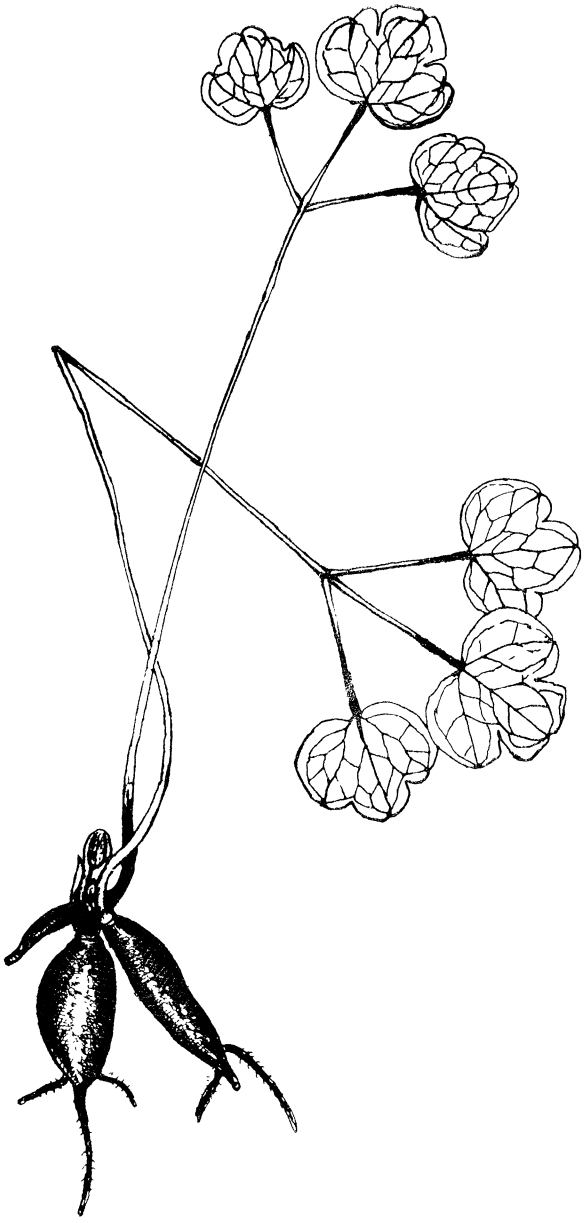

PLATE X. VOGT on SEEDLINGS.